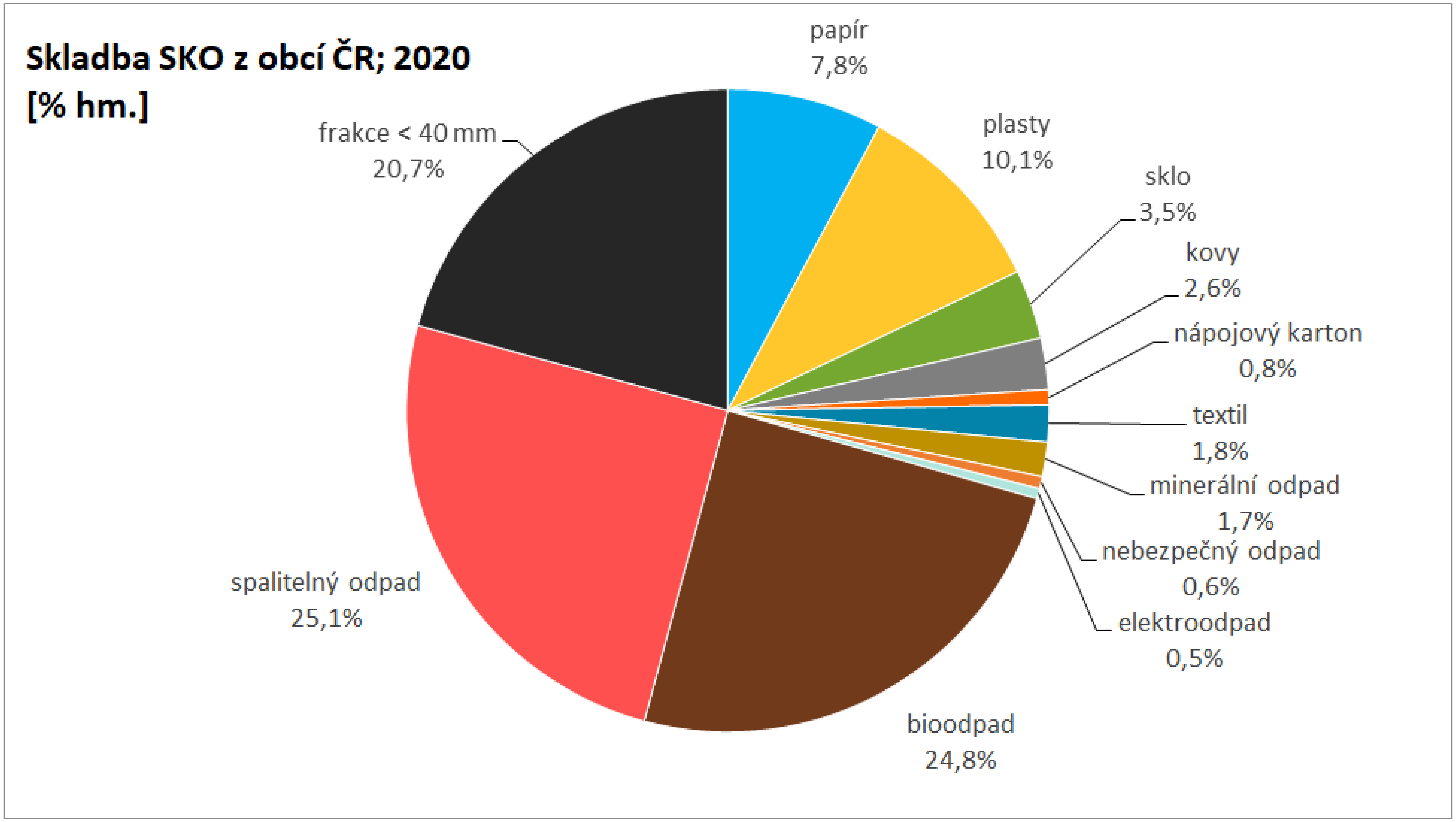
Waste-to-Energy Prospects in the Czech Republic

September 2022

The composition of mixed municipal waste in Czech Republic, 2020



Material balance of MMW sorting, material output for preRDF, TAP/RDF processing
Efficiency testing of MBU Knurów (VEČR a.s. + EKO-KOM, a.s.)

KNURÓW; podzim 2019	absolutní účinnost odtřídění [% hm.]		
VÝSTUPNÍ FRAKCE	vzorek 1	vzorek 2	ar. průměr
odstranění (skládka)	**60,2%**	**56,8%**	**58,5%**
potenciální TAP	**25,8%**	**29,1%**	**27,4%**
TAP	**4,2%**	**4,9%**	**4,6%**
materiálové využití	**8,4%**	**8,8%**	**8,6%**
sklo směs	0,3%	0,3%	0,3%
Fe	1,0%	1,2%	1,1%
Al	0,2%	0,2%	0,2%
papír směs	2,1%	2,2%	2,1%
vlnitá lepenka	1,5%	1,5%	1,5%
NK	0,3%	0,4%	0,3%
fólie směs	1,9%	1,6%	1,8%
fólie čirá	0,0%	0,0%	0,0%
PP	0,3%	0,4%	0,3%
PET čirý	0,4%	0,4%	0,4%
PET modrý	0,3%	0,3%	0,3%
PET zelený	0,0%	0,1%	0,1%
HDPE	0,1%	0,2%	0,1%
ztráta	**1,4%**	**0,4%**	**0,9%**
CELKEM	**100,0%**	**100,0%**	**100,0%**

Production of MSW in Czech Republic in mil. T / year

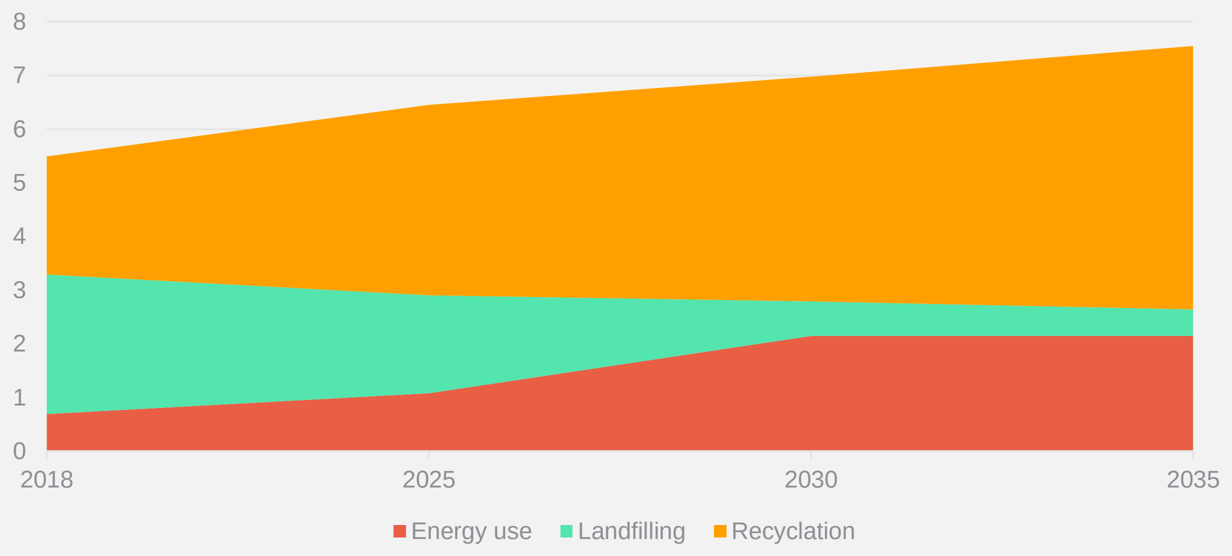
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	kg/per.
MŽP	5,78	5,87	5,96	6,06	6,15	6,25	6,35	6,45	6,55	6,66	6,76	6,87	6,98	7,09	7,20	7,31	7,43	7,55	686,36

Waste-to-Energy facilities in the Czech Republic - current and planned

Current capacity W-T-E	T / year
PS Praha	310 000
SAKO Brno	248 000
Termizo Liberec	96 000
ZEVO Plzeň	95 000
Total	749 000

Planned Capacity W-T-E	T / year	Year	Type
PS Praha	10 000	2024	MSW
SAKO Brno	122 000	2024	MSW
Karviná	350 000	2026	RDF
Přerov	250 000	2023	RDF
ČEZ Mělník	320 000	2029	MSW
Komořany	150 000	2025-29	MSW
Opatovice	100 000	2025-29	MSW
České Budějovice	150 000	2028	MSW
Total	1 452 000		

Waste-to-Energy and recycling targets of the Czech Republic in mil. T / year



	2018	2025	2030	2035
Landfilling	2,601	1,823	0,641	0,492
Recyclation	2,196	3,548	4,187	4,906
Energy use	0,694	1,080	2,150	2,150
	Current 2018	Target 2025	Target 2030	Target 2035
Landfilling	45%	28%	9%	7%
Recyclation	38%	55%	60%	65%
Energy use	12%	17%	31%	28%

How can municipal waste contribute to solving energy security?

Mgr. Bc. Michal Čoupek, MBA, MPA
Vice-chairman of the board
Director of Strategy Department

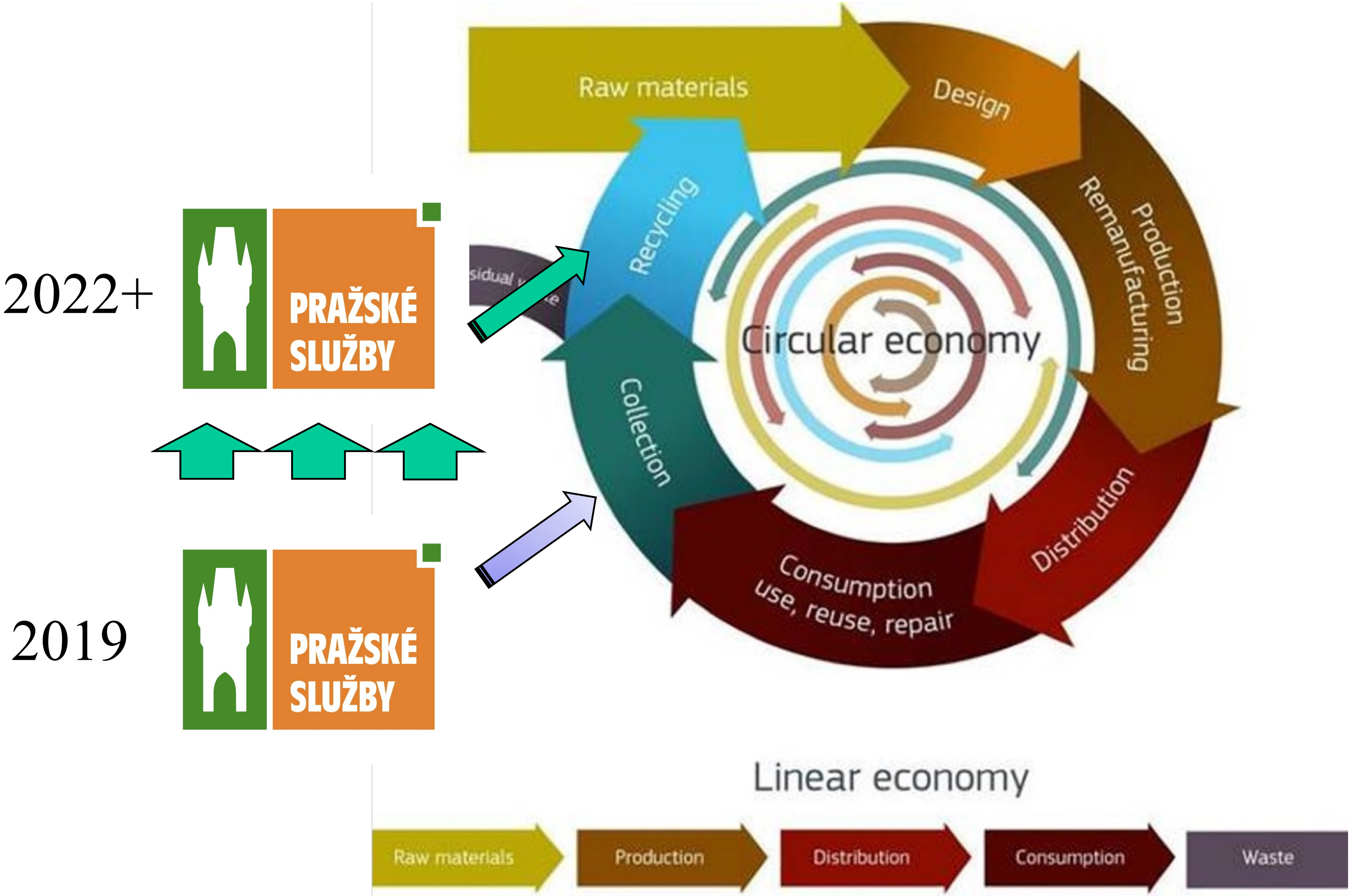
PRAŽSKÉ SLUŽBY

NEPŘEKONATELNÝ SERVIS

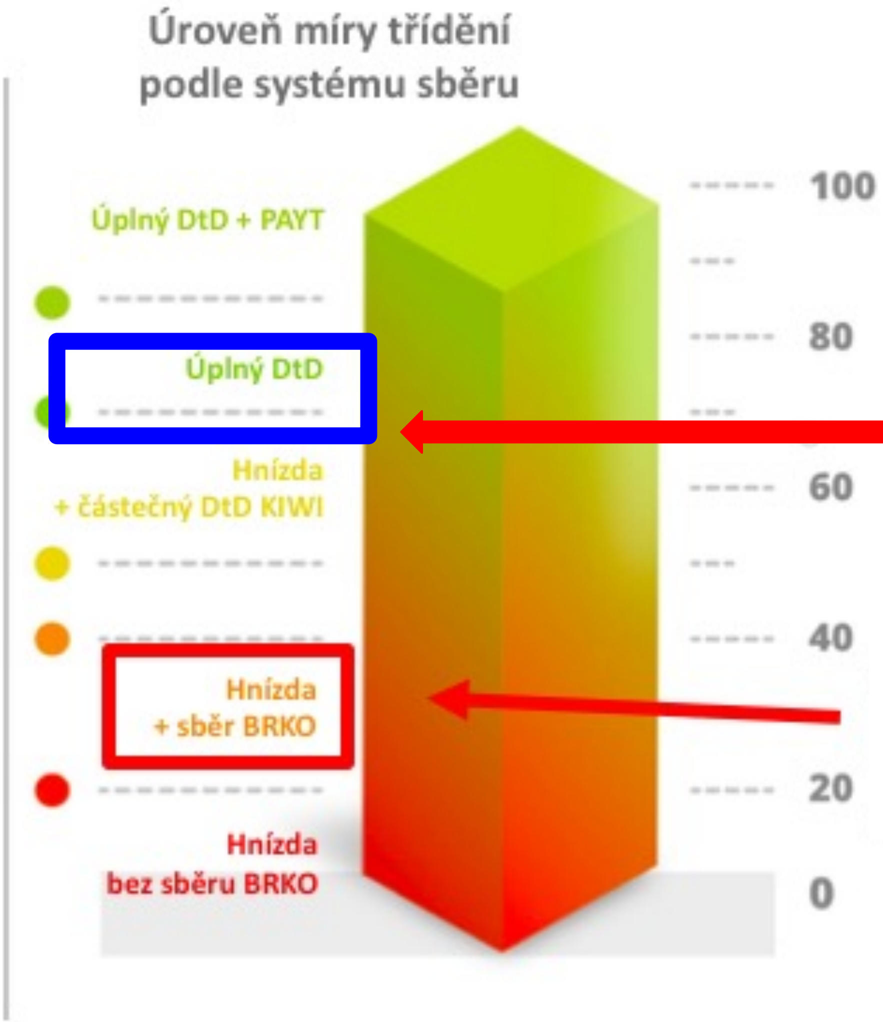
CERTIFIKOVÁNO ZÚS ČSN EN ISO 9001:2001

TÜV NORD

Where are we heading?



We will double MSW separation rate



In 2035, Prague will have to separate 70% of its municipal waste at source

In 2021, Prague separated 31% of its municipal waste

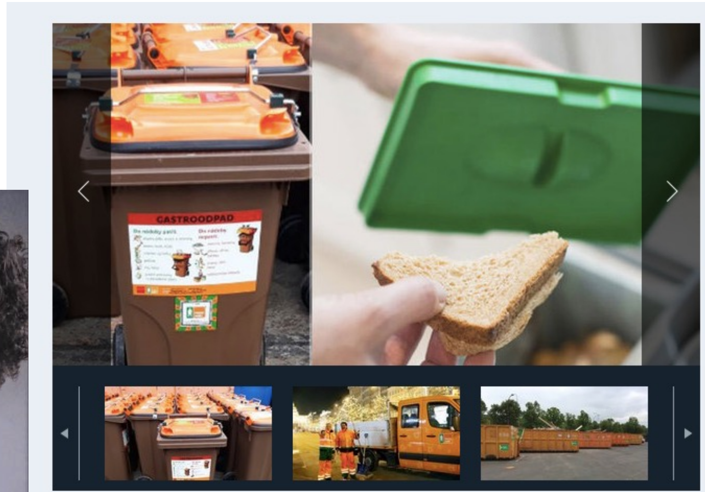
ZEVO Malešice– reliable source of affordable energy and resources

- ✓ **280 000 tons of waste / year**
- ✓ **Operational for 355 days / year**
- ✓ **Slag production 75 000 t/year**
- ✓ **Bottom ashes: 6000 t/year**
- ✓ **Metal scrap 3200 t/ year**
- ✓ **Electricity into grid: 40 000 MWh/year**
- ✓ **Heat generation:**

Biowaste = 10 millions m3 of biogas

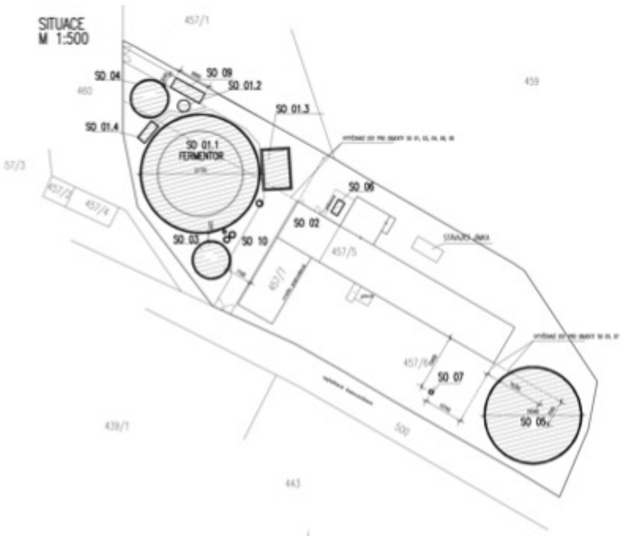
Food waste prevention campaign

Biowaste collection



bioCNG and digestate production

We have purchased our own biogas plant



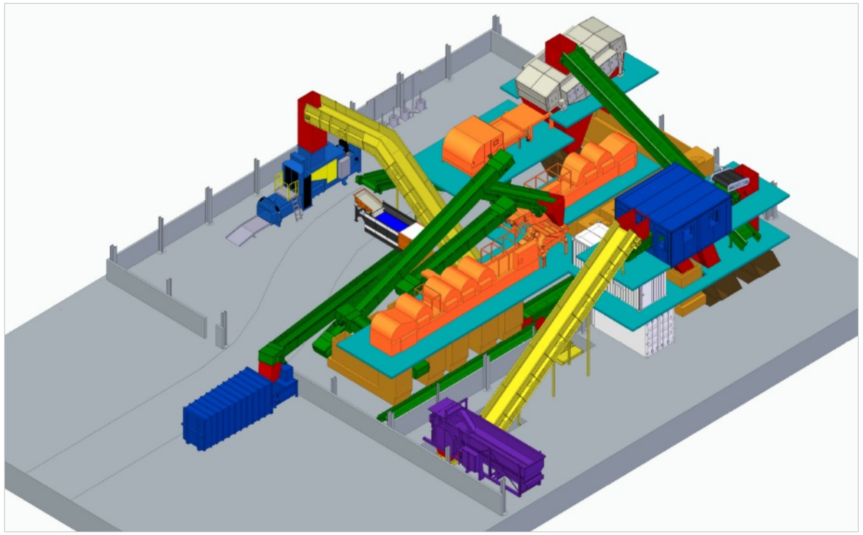
LEGENDA:

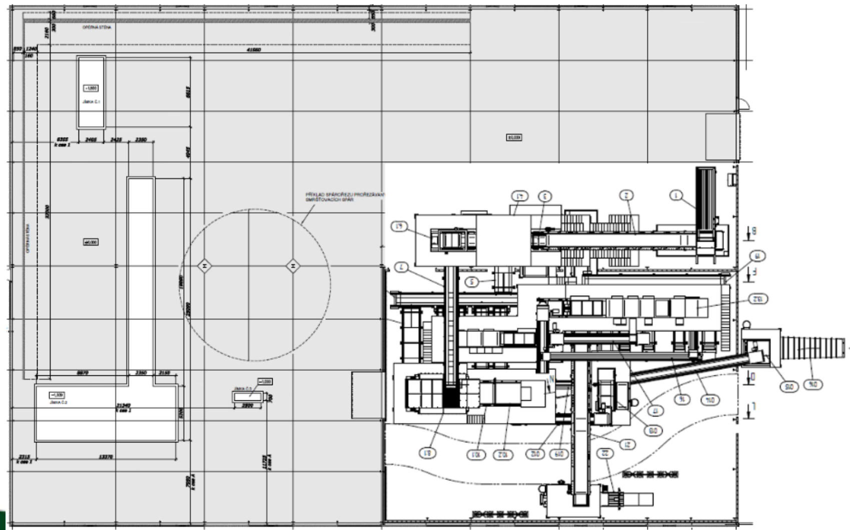
HRANICE POZEMKŮ DLE KN
KONSTRUKCE BOURANÉ
HRANICE POZEMKU INVESTORA
KONSTRUKCE BOURANÉ
OBJEKTY NAVRŽENÉ

LEGENDA OBJEKTŮ:

SO 01 FERMENTOR A OBSLUŽNÉ OBJEKTY
SO 01.1 FERMENTOR
SO 01.2 PŘEČERPÁVACÍ JÍMKA
SO 01.3 DÁVKOVAČ
SO 01.4 ČERPACÍ CENTRUM
SO 02 VESTAVBA KOGENERAČNÍ JEDNOTKY
SO 03 PLYNOJEM
SO 04 PŘIJMOVÁ JÍMKA
SO 05 SKLADOVACÍ JÍMKA
SO 06 TRAFOSTANICE
SO 07 POJISTNÝ HOŘÁK
SO 09 VÝDEJNÍ MÍSTO
SO 10 KOMUNIKACE

We are closing the packaging flows





- ✓ 16000 tons of plastic, metal and tetrapack post separation plant,
- ✓ RoI within 7 years

NEPŘEKONATELNÝ **SERVIS**

Jméno: **Mgr. Bc. Michal Čoupek, MBA, MPA**

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Investice, která má smysl

THE CONTRIBUTION

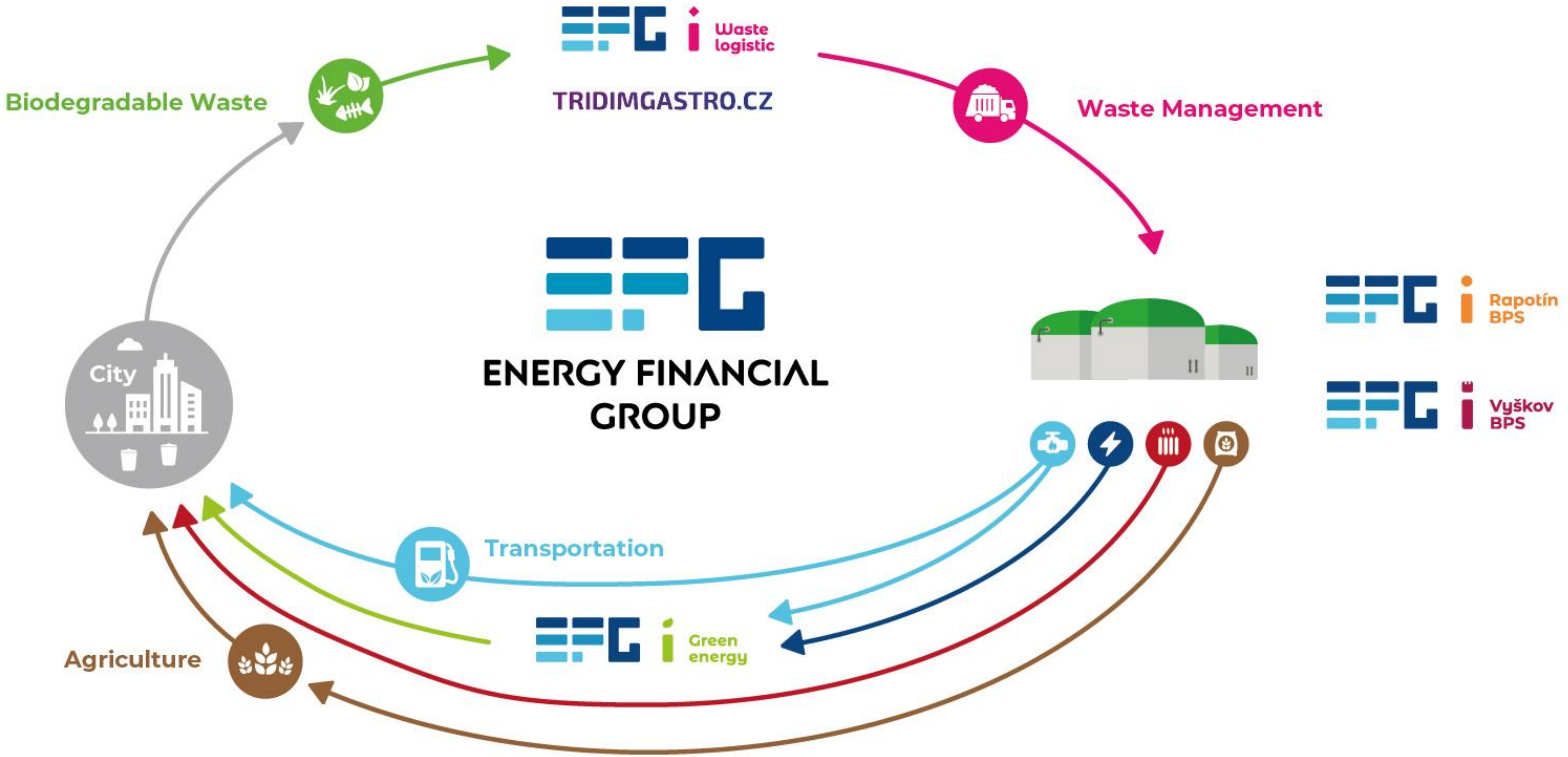
OF BIODEGRADABLE WASTE

TO THE ENERGY SECURITY OF THE CZECH REPUBLIC

TOMÁŠ VOLTR – CEO
Vice-Chairman of the Board of Directors

AGENDA

1. Role of **Biodegradable waste** in the Circular economy
2. Role of **Biogas Stations** in the Biodegradable Waste Management
3. **Energy potential** of the Biodegradable Waste in the Czech Republic


Waste logistic
TRIDIMGASTRO.CZ
Biodegradable Waste
Waste Management
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Rapotín BPS
Vyškov BPS
City
Transportation
Green energy
Agriculture

Role of Biogas Stations
in the Waste Management

Two Types of Biogas Stations

- Agricultural Biogas Stations
- Waste Biogas Stations

Waste Biogas Stations can process:

- Biodegradable waste from municipalities
- Gastro waste from restaurants and canteens
- Waste from the livestock industry
- Waste from the food processing industry

There are only three fully operating waste biogas stations in the Czech Republic

EFG Rapotín BPS

Rapotín BPS

Green gas

Processing capacity

30 000

tons per year

Energy production

2 000

households

Biomethane

Same as natural gas

Decentralized

Geopolitically safe

EVROPSKÁ UNIE
Evropské strukturální a investiční fondy
Operační program Životní prostředí

E.ON ENERGY GLOBE
OCENĚNÍ ZA ÚSPORY, EKOLOGII A INOVACE

STÁTNÍ FOND
ŽIVOTNÍHO PROSTŘEDÍ
ČESKÉ REPUBLIKY

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Energy Potential of Biodegradable Waste in the Czech Republic

- **Biodegradable waste: 1,8–2 million tons/year**
- **Biodegradable waste** can supply **66 waste biogas stations**
- **Potential in numbers**
  - **100 million Nm³** of biomethane
  - Gas consumption of 67 000 households
  - **18 382 BioCNG** automobiles
  - **Electricity** consumption of **132 000 households**

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The Most Important Steps to the Energy Security in the Czech Republic

- **Landfilling** of utilizable wastes should be forbidden early than 2030
- **Simplify** the construction proceedings
- **Investments:** part of extra income from high energy prices can be used for the development of renewable energy sources

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THANK YOU FOR YOUR ATTENTION

TOMÁŠ VOLTR – CEO, Vice-Chairman of the Board of Directors